

Defense Contract Management Command



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Software Performance Maturity Model Pilot Results

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DCMC Software Conference
Woodland Hills, CA
31 August - 2 September 1999

Agenda

➔ **Under Secretary of Defense** **(Acquisition & Technology - Acquisition** **Software Oversight**

- Model Overview
- Pilot Test
- Example Results Reporting
- Pilot CAOs Feedback
- Pilot Results
- Follow-on Activities
- On the Horizon
- Questions

Under Secretary of Defense
(Acquisition and Technology)
(USD(A&T))

Acquisition Software Oversight

Acquisition Software Oversight

- Serve as the Defense Acquisition Executive with full responsibility for supervising the performance of the DoD Acquisition System
- Responsible for Acquisition Software Oversight
- One of four focus areas
- Workshop for DoD organizations involved in improving ability to acquire software
- Exercises authority, direction, and control over Defense Logistics Agency (DoDD 5105.22)

Acquisition Software Oversight

- Objective: Determine baseline capability to:
 - share information
 - facilitate use of common products and services
 - recommend policy improvements

Dr. Delores Etter, Deputy Under Secretary of Defense (Crosstalk - Aug 99)

Software Performance Maturity Model Pilot Results

➔ Under Secretary of Defense (Acquisition & Technology - Acquisition Software Oversight

□ **Model Overview**

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Model Overview

- ⇒ Model
- ⇒ Purpose
- ⇒ Approach
- ⇒ One-Book Tracking
- ⇒ Events
- ⇒ Progressive Plan

Model Overview

What is the Software Performance Maturity Model

- Maturity model used to evaluate performance of Software CAS
- Based on the Software Acquisition Capability Maturity Model (SA-CMM)
- Process maturity framework to help DCMC improve their Software CAS process

Model Overview

- Model is based on actual practice and incorporates DCMC best practice
- Review process based on government & industry accepted approach (Software CMM & Software Capability Evaluation - SCE)

Model Overview

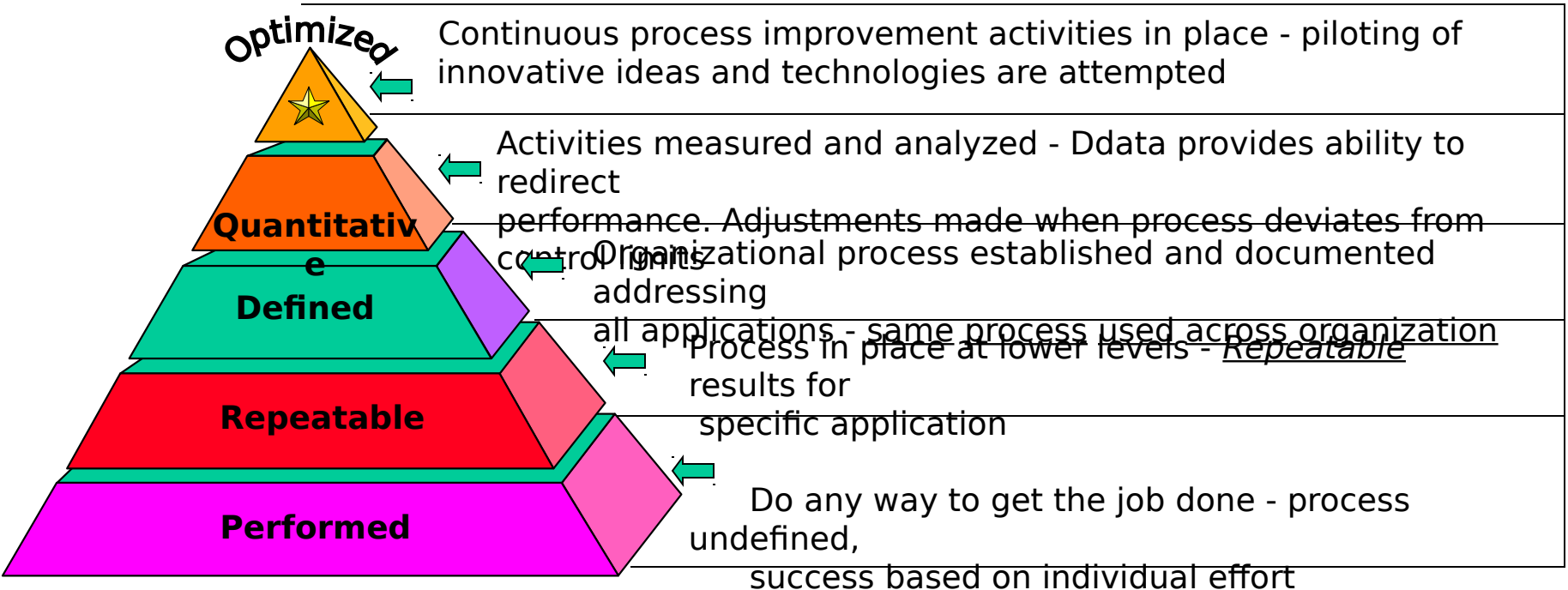
PURPOSE

Determine the “health” of DCMC CAO activities in the area of Software CAS performance.

- Baselines CAO Software CAS performance
- Provides a Road-Map for CAO performance improvement
- Identify potential needs to adjust Command training, policy, or guidance
- Allow Software Center identify Software CAS “noteworthy practices” or areas to focus assistance for performance improvement

Model Overview

Approach



The DCMC model is tailored to our Mission from the Software Acquisition - Capability Maturity Model, which was developed by the Software Engineering Institute.

Model Overview

One-Book Tracks to the Model

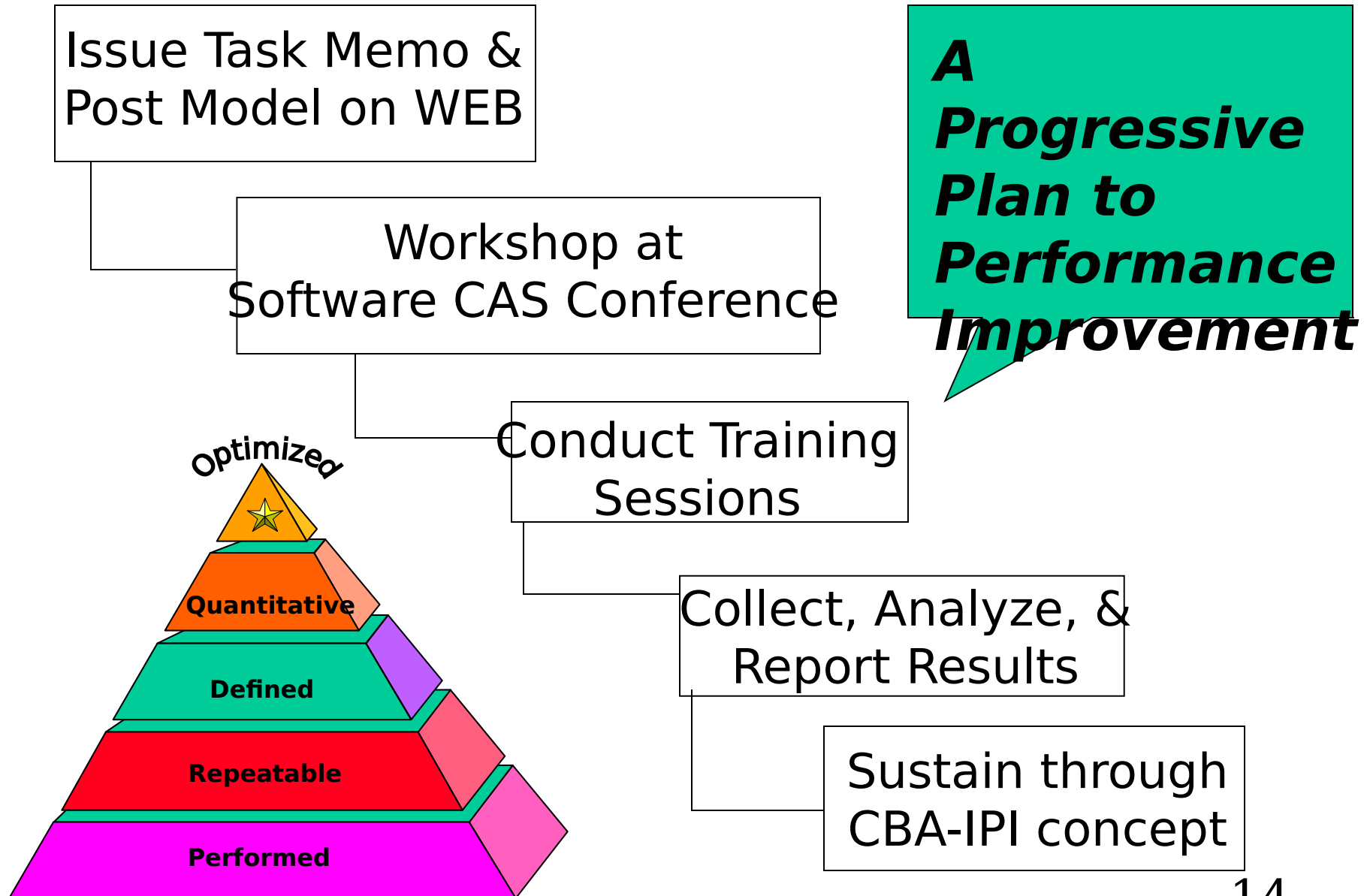
- Software Development Surveillance Chapter covered 100%
- 56% of the key practices have references to the One-Book
- A project goal is to enhance DCMC performance (One-Book) based upon DoD sponsored model (SEI Software Acquisition CMM)

Model Overview

Project Events

- Project funded FY 99
- Pilot Locations selected by Districts
- Pilot Reviews performed (APR 99)
- Pilot Review Results briefed (MAY 20th)

Model Overview



Software Performance Maturity Model Pilot Results

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Pilot Test

- ⇒ Approach
- ⇒ Impacts
- ⇒ Issues

Pilot Test

Approach

- Standardized method and data collection tools
- Involved team comprised of Software Center, Earned Value Center, CAO, and Districts
- Two trained/experienced teams (5 each)
- 6 locations selected by Districts (E&W)
- Questionnaires provided in advance
 - Return prior to pilot review optional
- Funded by Software Center

Pilot Test

Impacts

- Favorable feedback
- Majority of Software Professionals familiar with model approach
- Follow-on assistance requests have been received

Pilot Test

Issues were discussed as they came up.

Issues

- Review objective was not clearly understood
- Perception of added requirements imposed
 - Fear that CAO Commander will demand ultimate level (Optimized)
 - Fear of a Command-wide performance level

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Example Results Reporting

- ⇒ Pilot Roll-up
- ⇒ Tetris
- ⇒ Red/Green
- ⇒ Key Process Area

Example Results Reporting

- Exit briefing performed prior to departing each CAO
- The reporting methods used were improved to expedite the reporting process and provide the most usable information to the CAO
- The “tetris profile” and “Green/Red” charts was viewed by some Commanders as a good visual road map of results and performance improvement needs



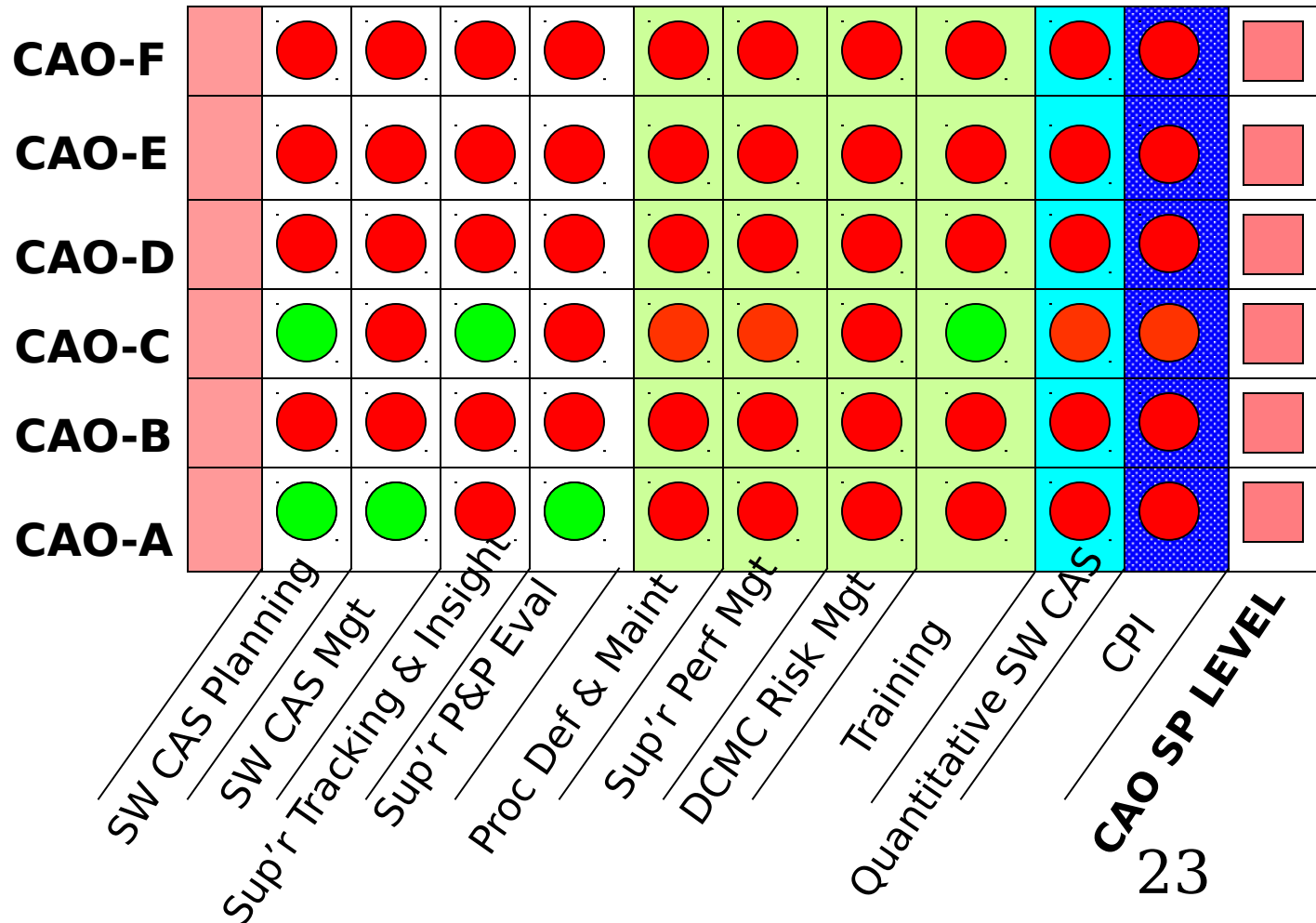
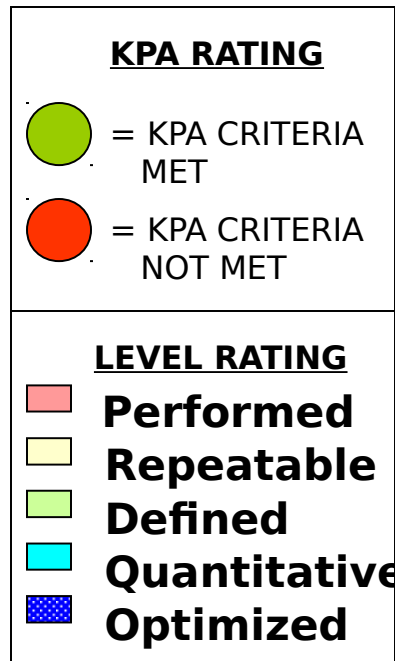
Example Result

Reporting

Pilot roll-up Software CAS activity performance

Identification of Command-wide performance indicators in specific software CAS activity

KPA SATISFACTION PROFILE



Example Result Reporting -

Tetris

Repeatable				Defined				Quantitative	Optimized
SW CAS Planning	SW CAS Mgmt	Supplier Tracking & Insight	Supplier Process & Product Evaluation	Process Definition & Maintenance	Supplier Performance Management	DCMC Risk Mgmt	Training		Continuous Process Improvem't
Co 1	Co 1	Co1	Co1	Co1	Co 1	Co 1	Co1	Co 1	Co 1
Co 2	Co 2	Co2	Co2	Co2	Ab 1	Co 2	Co2	Co2	Co 2
Ab 1	Ab 1	Ab 1	Ab 1	Co3	Ab 2	Ab 1	Ab 1	Ab 1	Co 3
Ac 1	Ab 2	Ab 2	Ab 2	Ab 1	Ac 1	Ab 2	Ab 2	Ab 2	Ab 1
Ac 2	Ab 3	Ab 3	Ab 3	Ab 2	Ac 2	Ab 3	Ab 3	Ac 1	Ab 2
Ac 3	Ab 4	Ac 1	Ac 1	Ab 3	Ac 3	Ac 1	Ac 1	Ac 2	Ac 1
Ac 4	Ac 1	Ac 2	Ac 2	Ab 4	Ac 4	Ac 2	Ac 2	Ac 3	Ac 2
Ac 5	Ac 2	Ac 3	Ac 3	Ac 1	Ac 5	Ac 3	Ac 3	Ac 4	Ac 3
Me 1	Ac 3	Ac 4	Ac 4	Ac 2	Ac 6	Ac 4	Ac 4	Ac 5	Ac 4
Ve 1	Me 1	80	Me 1	Ac 3	Me 1	Ac 5	Ac 5	Ac 6	Ac 5
Ve 2	Ve 1	Ac 6	Ve 1	Ac 4	Ve 1	Me 1	Me 1	Me 1	Ac 6
		Ac 7	Ve 2	Ac 5	Ve 2	Ve 1	Ve 1	Ve 1	Me 1
		Me 1		Ac 6		Ve 2	Ve 2	Ve 2	Me 2
		Ve 1		Me 1					Ve 1
		Ve 2		Ve 1					Ve 2
G1	G1	G1	G1	G1	G1	G1	G1	G1	G1
G2	G2	G2	G2	G2	G2	G2	G2	G2	G2
				G3	G3		G3	G3	G3
					G3				

Example Result Reporting - G/R

Maturity	Co1	Co2	Co3	Ab1	Ab2	Ab3	Ab4	Ac1	Ac2	Ac3	Ac4	Ac5	Ac6	Ac7	Me1	Me2	Ve1	Ve2
Performed																		
No KPAs																		
Repeatable																		
SWC PIn	Y	Y		Y				Y	Y	Y	Y	Y			Y		Y	Y
SWC Mgt	Y	Y		Y	Y	Y	Y	Y	Y	Y					Y		Y	
SW SURV	Y	Y		Y	Y	Y		Y	Y	Y	Y				Y		Y	N
Defined																		
SWC PD&M	N	N	Y	N	Y	Y	Y	Y	N	Y	Y	Y	N		Y		N	
SPM	Y			N	N			N	N	Y	Y	Y	N		Y		Y	Y
DCMC RM	N	N		Y	Y	Y		N	N	N	N	N			N		N	N
Tmg	Y	Y		N	Y	N		N	Y	Y	Y	N			N		Y	Y
Quantitative																		
QSWC	N	N		Y	N			N	N	N	N	N	N		N		N	N
Optimized																		
DCMC CPI	N	N	N	N	Y			N	N	N	N	N	N		N	N	N	N
Commitment	Co																	
Ability	Ab							N	Not Met									
Activity	Ac																	
Measurement	Me							Y	Met									
Verification	Ve																	

Example Result

Reporting CAO Data Roll-up

Maturity	Co1	Co2	Co3	Ab1	Ab2	Ab3	Ab4	Ac1	Ac2	Ac3	Ac4	Ac5	Ac6	Ac7	Me1	Me2	Ve1	Ve2
Performed																		
No KPAs																		
Repeatable																		
SWC Plan	2	1		0				3	3	3	1	1			5		1	5
SWC Mgt	4	0		0	2	2	4	5	6	4					5		2	
SW ST&I	0	1		0	4	5		0	2	2	1	1	2	1	5		3	3
SW SP&PE	0	0		1	2	4		4	5	6	2				6		6	5
Defined																		
SWC PD&M	4	3	3	3	3	3	5	5	5	6	4	4	5		4		5	
SPM	0			2	1			5	5	4	6	0	3		4		2	3
DCMC RM	3	4		1	2	2		4	5	5	4	4			5		4	4
Tmg	1	1		3	2	1		3	2	0	1	5			2		1	1
Quantitative																		
Quan SWC	5	5		5	4			5	6	6	6	6	5		6		6	6
Optimized																		
DCMC CPI	6	2	3	3	1			6	6	6	6	2	4		6	6	6	6
Commitment	Co																	
Ability	Ab																	
Activity	Ac																	
Measurement	Me																	
Verification	Ve																	

"One Book"

Not "One-Book"

Number of CAO occurrences of maturity model "Not Met"

Example Result

Reporting

Key Process Area: Software CAS PLANNING

The purpose of Software CAS Planning is to ensure that all reasonable planning for the Software Acquisition is conducted and that all elements of the project are included.

STRENGTHS

Software Surveillance Plans in place and have been distributed.

WEAKNESSES

No CAO Software Facility Plan is currently in place.

No CAO Software CAS strategy is currently In place.

No measurements are currently being made by management of the Software CAS planning activities.

No single CAO process in place for contract review, Government rights, or Government Furnished Equipment.

CAO management demonstrates a minimal level of awareness of the use of

SPECS as a resource estimating tool for Software CAS activities.

Software Performance Maturity Model Pilot Results

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- **Pilot CAOs Feedback**
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Pilot CAOs Feedback

- ⇒ CAO view of Strengths and Weaknesses
- ⇒ If you were the ruler for the day, what one thing would you do to improve DCMC Software CAS?

Pilot CAOs Feedback

CAOs view of **Strengths**

- Software Subject Matter Expert in Technical Assessment Group
- Mentoring provide to Software Professionals
- Customer interface
- Management recognizes importance of software
- Software Professionals are dedicated to get the job done
- Good team leaders and supervisors
- Cross-talk meetings provide team building

Pilot CAOs Feedback

CAOs view of **Strengths**

- Pooling Software Professionals for multiple programs
- Concept of SPDP
- Customer interaction
- Transitioning 1910s to perform Software CAS
- People and teams
- Management does not micro manage

Pilot CAOs Feedback

CAOs view of **Strengths**

- Communication with subcontractors
- Reorganization of Software Professionals into one group
- Customer focus
- Ability to change

Pilot CAOs Feedback

CAO view of **Weaknesses**

~~Lack of resources~~

- Lack of skilled Software Professionals
- Lack of software CAS strategy that considers the maturity of the contractor
- Maturity of the DCMC Software CAS process
- Need for surveillance plans
- Implementation of SPECS

Pilot CAOs Feedback

CAO view of **Weaknesses**

~~Lack of management training for~~
software

- Immature software process
- Availability of training slots
- Lack of accountability
- SPDP is not part of DAWIA

Pilot CAOs Feedback

CAO view of Weaknesses

Documenting and reporting skills

- Experience of Program Integrators
- Mentoring in general
- Future of Software CAS in DCMC
- Aging workforce
- Lack of training in: software applications, testing, domain

Pilot CAOs Feedback

CAO view of **Weaknesses**

- Timely information from Buying Command
- Organizational structure
- Disconnect with DCMC & customer mission
- Management support relative to feedback to District

Pilot CAOs Feedback

Improvements to Software

CAS

- Align DCMC Software CAS activities to supplier activities through better risk management
- Attain a software resource for Technical Assessment Group
- Gain better visibility into Software CAS activities
- Eliminate Automated Metrics System or SPECS

Pilot CAOs Feedback

Improvements to Software

CAS

- would like to see a standard Software CAS process and gain help in putting it together
- Do away for the service team structure and develop a matrix organization within the CAO
- Expand the work hours to allow for the performance of assigned tasks
- SPECS roll-up on a Command-wide level should be done

Pilot CAOs Feedback

Improvements to Software

CAS

Reduce the use of the “paperless system” to enhance the document review process or provide better hardware to enable reading documents

- Better Program Management Office communications and availability of technical data
- Improve the availability of contractor data
- Improve training and provide more training

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Pilot Results

⇒ Key Process
Areas

⇒ Strengths

Pilot Results

The following results reflect the *systemic* observations by Key Process Area identified during the Software Performance Pilot Review.



Pilot Results

Software CAS Planning

- All CAOs have not adopted a single software CAS strategy for performing their activities
- Contract Review is not being consistently performed
- Surveillance Plans are not documented consistently

Pilot Results

Supplier Product & Process Evaluations

- Process and product evaluations are not being consistently performed
- Performance of product and process evaluations were (in some cases) performed through attending formal reviews or meetings

Pilot Results

Software CAS Process Definition & Maintenance

- Most pilot locations had not established a standard Software CAS process for the CAO

Supplier Performance Management

- Coordination of Software CAS activities is not
being performed consistently on
programs
requiring system functional areas

Pilot Results

Software CAS Management

- Management is not consistently involved with
the evaluation or direction of correction
actions
of deviations from Software CAS project
plans
- Managers have not attended M32B
training

DCMC Risk Management

Pilot Results

Training

- Software training needs are not being appropriately identified
- Allocations for mandatory training are not available
- Mentors are not being assigned
- Evaluation of training effectiveness is not being performed

Pilot Results

CAOs

Strengths

- Plans developed and maintained on regular basis
- Appointment of CAO Subject Matter Expert
- Participation in Integrated Product Teams as active members
- Process evaluations result status provided to management
- Strong interdisciplinary teaming
- CAO Subject Matter Expert responsible for DCMC Risk Management

Pilot Results

CAOs

Strengths

- Strong results from mentoring program
- Management attendance at SPDP courses
- Overall level of trained and experienced software personnel
- DCMC Risk Management practices were noteworthy
- CAO utilizing contractor training
- EVMS monitor conducting internal training
- Personnel training in Continuous Process Improvement

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Follow-on Activities

- Tasking Memo, 99-255
- Software Performance Maturity Model Training and CAO Baseline Reviews
- Strategy is to establish a consistent and repeatable Software CAS approach
- Training Dates
 - East Coast Offering (14-16 Sept 99)
 - Ramada Inn - Rockland, MA
 - West Coast Offering (28-30 Sept 99)
 - Ramada Plaza LAX South - El Segundo, CA

Follow-on Activities

- Baseline Reviews
 - CAOs that have Software CAS requirement
 - Will use Software Capability Evaluation process
 - Software Performance Maturity Model V2.3
 - Software Performance Questionnaire V2.0
- Review Team Composition
 - Software Center or Qualified Team Lead
 - Certified Software Professional
 - CAO Software Professional training in the Software Performance Maturity Model methodology
 - Senior Functional Advisors (invited to participate)

Follow-on Activities

- Review Schedule
 - Review Team Leads will coordinate with CAO Commanders
 - Review completion date: March 2000
 - Results posted on home page 28 April 2000
- DCMC action plan will be developed after data analysis
- Software Performance Maturity Model will establish future Internal Operations Assessment guidance

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On the Horizon

Integration with other Models

- Integrate the Software Performance Maturity Model with Earned Value and Engineering
- Allows for integrated reviews by multifunctional team
- Reduces the number of reviews performed at CAOs

On the Horizon

Integration with other Models

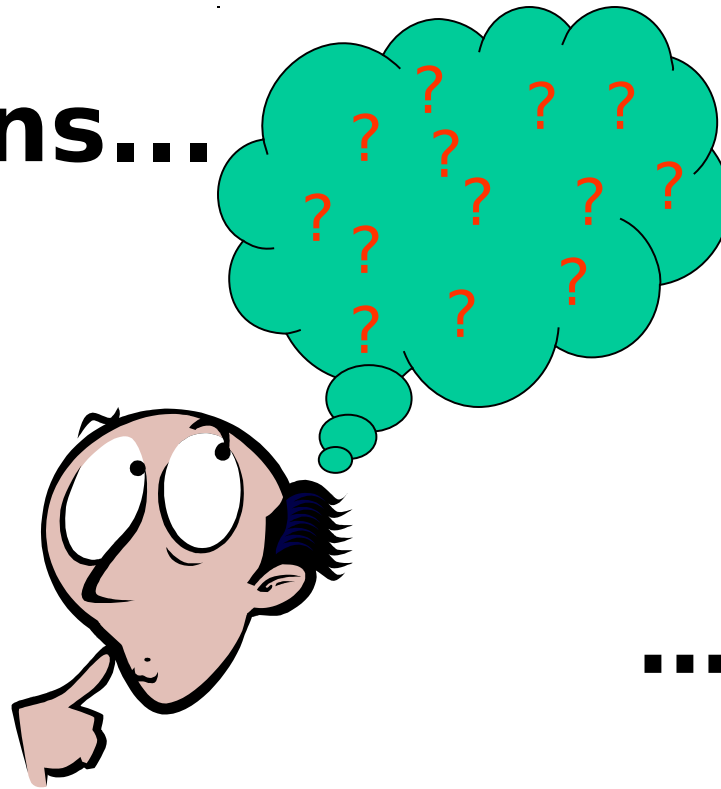
- Eliminates overlap in separate functional models
 - planning, management, process definition, supplier performance management, risk management, training, quantitative CAS, and process improvement KPAs

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Software Performance Maturity Model Pilot Results

Questions...



... Answers